

13. The method of claim 12, wherein the PET scan analysis is performed by administration of radiolabeled ^{18}F sodium fluoride (^{18}F -NaF) to the human subject.

14. The method of claim 1, wherein the therapeutically effective amount of an Activin A antagonist is administered to the human subject for at least 8 weeks.

15. The method of claim 1, further comprising selecting a subject having FOP who would benefit from decreasing formation of new heterotopic ossification lesions.

16. The method of claim 15, wherein the subject who would benefit from decreasing formation of new heterotopic ossification lesions is about to undergo surgery.

17. The method of claim 1, wherein the human subject is about to undergo therapeutic treatment for FOP.

18. The method of claim 1, wherein the Activin A antagonist

- (a) does not decrease the number, volume, or size of any pre-existing lesions in the human subject;
- (b) is a protein or a small molecule; and/or
- (c) is administered in combination with a second therapy.

19. (canceled)

20. The method of claim 1, wherein the Activin A antagonist is an anti-Activin A antibody, or antigen-binding fragment thereof.

21. The method of claim 20, wherein the anti-Activin A antibody, or antigen-binding fragment thereof,

- (a) is a chimeric, veneered, humanized or human antibody, or antigen-binding fragment thereof; or
- (b) is a human kappa IgG1 antibody; and/or
- (c) comprises a heavy chain variable region having at least 90% identity with SEQ ID NO:1 and a light chain variable region having at least 90% identity with SEQ ID NO:5.

22. (canceled)

23. The method of claim 20, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises the following six CDR sequences:

- (a) an HCDR1 having at least about 80% identity to the sequence GGSFSSHF (SEQ ID NO: 2);
- (b) an HCDR2 having at least about 80% identity to the sequence ILYTGGT (SEQ ID NO: 3);
- (c) an HCDR3 having at least about 80% identity to the sequence ARARSGITFTGIIVPGSFDI (SEQ ID NO: 4);
- (d) an LCDR1 having at least about 80% identity to the sequence QSVSSSY (SEQ ID NO: 6);
- (e) an LCDR2 having at least about 80% identity to the sequence GAS (SEQ ID NO: 7); and
- (f) an LCDR3 having at least about 80% identity to the sequence QQYGSSPWT (SEQ ID NO: 8).

24. The method of claim 23, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises the following six CDR sequences:

- (a) an HCDR1 having the sequence GGSFSSHF (SEQ ID NO: 2);
- (b) an HCDR2 having the sequence ILYTGGT (SEQ ID NO: 3);
- (c) an HCDR3 having the sequence ARARSGITFTGIIVPGSFDI (SEQ ID NO: 4);
- (d) an LCDR1 having the sequence QSVSSSY (SEQ ID NO: 6);
- (e) an LCDR2 having the sequence GAS (SEQ ID NO: 7); and
- (f) an LCDR3 having the sequence QQYGSSPWT (SEQ ID NO: 8).

25. The method of claim 24, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises a heavy chain variable region having at least 90% identity with SEQ ID NO:1 and a light chain variable region having at least 90% identity with SEQ ID NO:5.

26. The method of claim 25, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises a heavy chain variable region having at least 95% identity with SEQ ID NO:1 and a light chain variable region having at least 95% identity with SEQ ID NO:5.

27. The method of claim 26, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises a heavy chain variable region comprising SEQ ID NO:1 and a light chain variable region comprising SEQ ID NO:5.

28. The method of claim 27, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, comprises a heavy chain comprising SEQ ID NO:25 and a light chain comprising SEQ ID NO:26.

29. (canceled)

30. The method of claim 20, wherein the anti-Activin A antibody, or antigen-binding fragment thereof, competes for binding with an antibody comprising the following six CDR sequences:

- (a) an HCDR1 having the sequence GGSFSSHF (SEQ ID NO: 2);
- (b) an HCDR2 having the sequence ILYTGGT (SEQ ID NO: 3);
- (c) an HCDR3 having the sequence ARARSGITFTGIIVPGSFDI (SEQ ID NO: 4);
- (d) an LCDR1 having the sequence QSVSSSY (SEQ ID NO: 6);
- (e) an LCDR2 having the sequence GAS (SEQ ID NO: 7); and
- (f) an LCDR3 having the sequence QQYGSSPWT (SEQ ID NO: 8).

31. (canceled)

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